

CLAIMS

1. – Equalisable active electro-acoustic device applied to commercial panels, CHARACTERISED through transforming into elements radiators of high fidelity sound flat-topped panels, partition walls or facings existing in the market of diverse materials, such as: mineral fibre, plasterboard, plywood, etc. without requiring the use of adapters specially designed for each type of panel, for which it has an electromagnetic transducer or motor and an amplifier-equaliser specially designed for each type of panel, achieving a linear response, it also has the means necessary to effect the attachment of the motor to the back of the panel, having five contact areas between the device and the back of the panel, obtaining neutral sound radiator elements, with response from 100 to 20,000 Hz \pm 3 dB and efficiency of 94 dB/W/m.

2. - Equalisable active electro-acoustic device applied to commercial panels, according to claim 1, CHARACTERISED in that the amplifier (1) is mounted on the motor through the chassis (5). On said chassis have been installed the main magnetic polar piece (6), the magnet (7) and the secondary polar piece (8). All this assembly has an air gap (11) wherein centred axially and laterally a moving coil (10) is mounted, being suspended by means of the hangers or suspension elements (12a) and (12b). Furthermore the moving coil (10) is firmly attached to the adapting piece (9), through which (adapting piece (9)), the vibrations are transmitted to the panel (14). The electric connection of the assembly is implemented by means of the flexible leads (13) to the plug (2).

3. - Equalisable active electro-acoustic device applied to commercial panels, according to claim 1, CHARACTERISED in that the means of attachment of the motor-amplifier-equaliser assembly on the back of the panel (14), consists of some feet which are stuck to the back of the panel (14) by means of a 10-minute epoxy resin. Inside said feet, are mounted some elastic couplers (3) whereon the assembly rests by means of the actual feet (15) of the device. These feet, elastic and damped, constitute the main mechanisms of the device for the elimination of the characteristic resonances of the panel where it is applied.

4. - Equalisable active electro-acoustic device applied to commercial panels, according to claim 1, CHARACTERISED in that to obtain a neutral sound radiator in the panels with audible resonance, such as plaster or stucco,

on the back of the panels some pieces of high-density polyurethane foam are mounted which eliminate the characteristic resonances of the panels. These pieces of foam, constitute the secondary mechanism for elimination of the characteristic resonance of the panel.

5 5. - Equalisable active electro-acoustic device applied to commercial panels, according to claim 1, CHARACTERISED in that the electromagnetic transducer assembly or motor and the amplifier-equaliser have five points of connection with the back of the panel, wherein four correspond to bearings or supports of the perimeter, while the fifth support is that of the adapter which
10 connects the coil to the panel and produces the sound vibration of the panel.

 6. - Equalisable active electro-acoustic device applied to commercial panels, according to claim 1, CHARACTERISED in that as an extension of the proposed system a subwoofer is mounted which has its own amplifier obtaining a response from 20 to 100 Hz to finally obtain an overall response of the system
15 from 20 to 20,000 Hz, with a neutral (high fidelity) transducer.

 7. - Equalisable active electro-acoustic device applied to commercial panels, according to claims 1, 2, 3, 4, 5 and 6, CHARACTERISED in that it is intrinsically, a planar sound transducer, with the inherent property of spreading the sound, produced by it, in spherical and not conical form (like loudspeakers)
20 making it much more efficient, each device thereof being capable of replacing effectively, 3 or more loudspeakers in an environment with this sound system installed.

 8. - Procedure for conversion of commercial flat-topped panels, of partitions or facings into planar and invisible high fidelity sound radiators,
25 CHARACTERISED in comprising the following steps:

 a. - Analysis of the response or acoustic behaviour of the selected panel when the electro-acoustic transducer or motor and the assembly of polyurethane foams, should these be necessary, are mounted thereupon.

 b. - Design of the appropriate equaliser for the type of panel selected.

30 c. - Verification of the panel, motor-amplifier-equaliser assembly with laboratory instruments.

 d. - Definition of the appropriate equaliser-amplifier for the panel selected.

 9. - Procedure for mounting the assembly formed by the electro-acoustic
35 devices or motors and the amplifier-equalisers on the panels to transform the

latter into planar and invisible radiators of high fidelity sound, comprising the following steps:

- A template is placed on the back of the panel. Said template is slightly adhesive in order to be able to remove the template later. On said
5 templates there is a series of perforations coincident with those of the five points of connection, the four of the feet and that of the coupler, which join the coil to the back of the panel.
- Next a 10-minute epoxy adhesive is applied on the holes revealed by the template.
- 10 • The template is removed.
- Between the motor and the adapting piece is placed an additional piece or wedge for positioning, which serves to position the coil in height with respect to the panel.
- The motor is attached with the five fastening points coinciding with
15 those on the back of the panel, wherein the epoxy adhesive has been applied.
- Wait ten minutes for the epoxy adhesive to cure.
- Remove the additional positioning piece or wedge positioning the height of the coil with respect to the panel before beginning to use.
- Wait 15 minutes before making full use of the mounted assembly.